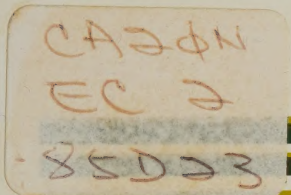



Deposit Insurance and the Incentive for Excessive Risk-Taking: Alternative Strategies for Reform

James E. Pesando

Discussion Paper Series



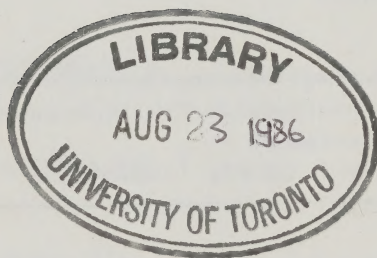


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**DEPOSIT INSURANCE AND THE INCENTIVE FOR
EXCESSIVE RISK-TAKING:
ALTERNATIVE STRATEGIES FOR REFORM**

by James E. Pesando



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James E. Pesando is professor of economics and director, Institute for Policy Analysis, University of Toronto.

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Preface

The substantial losses suffered by the Canada Deposit Insurance Corporation (CDIC) since 1983 have attracted much attention. The board of directors of the CDIC decided in 1983 to record a general provision for loss of \$630 million, in large part as a response to the failure of four trust companies (Crown, Greymac, Seaway, and Fidelity). As a consequence, the balance in the deposit insurance fund of the CDIC fell in 1983 from a surplus of \$253 million to a deficit of \$332 million. In 1984 the CDIC increased the general provision for loss by \$600 million, to reflect its revised estimates of losses on past failures (\$470 million) as well as losses emanating from the three failures that occurred in the first months of 1985 (\$130 million). As a consequence, the deficiency in the deposit insurance fund at year-end 1984 had risen to \$871 million.

The financial problems faced by the CDIC are, of course, of direct concern to the province of Ontario. The CDIC insures provincially as well as federally incorporated trust and loan companies. The Crown, Greymac, and Seaway trust companies were all incorporated in the province of Ontario. Indeed, the Ontario Task Force on Financial Institutions was created in June 1984 by the then Minister of Consumer and Commercial Relations, Dr. Robert Elgie, in the aftermath of the government's decision to take control of these financially-troubled trust companies. Not surprisingly, the interim report of this task force dealt extensively with the questions of financial solvency in general and the role of deposit insurance in particular. The issues of equity and efficiency that surface in any discussion of deposit insurance are relevant to Ontario. Moreover,

there is legitimate concern about the possibility that the dependence of the CDIC on either federal or provincial regulators limited its ability to protect its own interest and thus increased its loss exposure.

There is general agreement that some forms of financial deregulation may bring with them an increased risk of failure, at least for some institutions. In view of this fact, together with the recent loss experience of the CDIC, it is timely to consider the prospects for long-run reform of the present system of deposit insurance. The primary objective of this report is to review alternative strategies for achieving the most important reform, that of eliminating the incentive for excessive risk-taking contained in the present system. Many commentators, for example, have noted that a financially troubled institution might be able to attract deposits by offering a slight increase in rates, in spite of a poorly managed or excessively risky asset portfolio. As long as depositors are insured (or act as if they are insured), they will not concern themselves with either the degree of leverage of the deposit-taking institution or the degree of risk in its asset portfolio.

Academic economists have traditionally favoured a system of risk-based insurance premiums as a means of forcing the managers of insured institutions to internalize the risk associated with their investment decisions. Practitioners, while acknowledging the theoretical appeal of risk-based deposit insurance, have pointed to the difficulties in implementing such a system. Yet a system in which premiums are set at a constant rate per dollar of insured deposits (currently $3\frac{1}{3}$ cents per year for each \$100 of insured deposits) is conceptually flawed. Only if the risk of insolvency is – through regulation and supervision – homogenized across financial institutions can this flat premium rate be justified. At year-end 1983 there were 137 federal member institutions of the CDIC – 72 banks and 65 trust and loan companies. In addition, 51 provincial trust and mortgage loan companies were members. Few would argue that all represent equal risks to the CDIC.

The incentives contained in the present system thus invite a more detailed analysis of risk-based insurance premiums and alternative strategies for inducing the management of insured institutions to internalize risk. These alternative strategies seek to harness market forces by creating the right incentives for shareholders, subordinated debtholders, and/or uninsured or co-insured depositors.

This study first reviews the incentive for excessive risk-taking contained in the present system. Theoretically, this incentive can be controlled or eliminated in five ways:

- 1 Through higher capital requirements, which will alter the self-interest of shareholders by forcing them to participate in 'bad' as well as 'good' outcomes from risky investment strategies.
- 2 Through the issuance of subordinated debt by insured institutions; this action will harness the self-interest of debtholders in the service of controlling management's ability to assume risk and ensuring correct pricing the residual risk to which debtholders are exposed.
- 3 Through risk-based insurance premiums.
- 4 Through co-insurance with depositors, who then become the principle instrument of market discipline.
- 5 Through tighter regulation and supervision designed to equalize risk across insured institutions.

This report has a dual purpose. The first is to promote discussion by providing a preliminary economic assessment of alternative strategies for reform. The second is to draw attention to the research issues that must be addressed in any comprehensive study of the future course of deposit insurance in Canada.

1

The incentive for excessive risk-taking

Consider, for simplicity, a system in which all the deposits of a financial institution are insured. The institution will be able to raise funds by issuing risk-free liabilities, even if it invests in very risky assets. Yet deposit insurance does not eliminate risk; it only repackages it. In this case, the risk associated with the institution's risky asset portfolio is transferred to those agents who ultimately underwrite the deposit insurance. These would include sound or low-risk financial institutions or their customers and, possibly, taxpayers at large.

In the absence of deposit insurance, institutions that elected to hold risky assets would have to pay a premium rate on their deposits, in order to compensate depositors for their increased risk. The situation is analogous to that of a nonfinancial corporation that must pay on its marketable debt a yield premium that is commensurate with the market's assessment of its risk. If there is a credible ceiling on the maximum insurable deposit, and if depositors efficiently process information regarding the risk status of deposit-taking institutions, then the yield on deposits in excess of this ceiling will bear an appropriate risk premium. Since deposits that are less than the ceiling are risk free, their yield will contain no risk premium.

Academic economists point out that the market value of the shares of an insured institution will be maximized if management assumes the maximum amount of risk in its asset portfolio, subject to whatever limit is effectively imposed by regulation. (This outcome is readily shown if investors are risk-neutral or if the risk borne by the shareholders of the insured institution is fully diversifiable.) To see

the logic behind this result, one need simply note that the amount of equity capital on the balance sheet of deposit-taking institutions is low. As a consequence, shareholders reap most of the benefits of 'good' outcomes yet are able to shed – through their limited liability – most of the consequences of 'bad' outcomes. (The provider of deposit insurance also benefits from 'good' outcomes, since such outcomes reduce the likelihood of a subsequent claim by the insured institution.) This asymmetric sharing of risk is the key to the incentive for excessive risk-taking, given the indifference of insured depositors to the degree of risk in the institution's asset portfolio.

The incentive for management to take excessive risk can be highlighted in other ways. Practitioners may emphasize, for example, the simple fact that the management of an insured institution need not concern itself with the reaction of depositors to its investment decisions. The incentive for excessive risk-taking need not manifest itself in a conscious decision by management to, say, hold only the riskiest assets permitted by regulation. Relative to a world without insurance, management may – for example – simply pay less attention to the traditional goal of maintaining an efficiently diversified asset portfolio.

To sum up, deposit insurance provides an incentive for the managers of insured institutions to assume more than the socially optimal amount of risk. In economists' jargon, the insurance introduces a standard moral hazard problem. Moral hazard is said to exist whenever the act of insuring an event increases the probability that the event will occur. Deposit insurance, in effect, insures against the failure of a financial institution. In so doing, it increases the likelihood that such a failure will occur.

The incentive for excessive risk-taking might well result in an overallocation of both financial and real capital to risky investment projects. If so, this would be the ultimate economic inefficiency associated with the present system of deposit insurance. It would occur whenever an insured institution extended credit to finance a risky investment project without requiring a commensurate risk premium. An important manifestation of this inefficiency would probably be an increased incidence of financial failures, such as we have seen in recent years.

The present system of deposit insurance also promotes inefficient risk-bearing, as insured institutions have no incentive to hold only

well-diversified asset portfolios. The failures of Pioneer Trust and Western Capital Trust were due, in large part, to excessive concentrations of mortgage loans against Western-based real estate. The need to rescue the Canadian Commercial Bank is also linked to its inefficiently diversified asset portfolio. In this case, the loans secured by oil and gas rigs in Texas did not diversify a portfolio that was heavily exposed to the oil and real estate markets in Western Canada, which are both very dependent upon the prospects for the oil and gas industry.

2

Inducing management to internalize risk

To undo the incentives created by the present system of deposit insurance, one must induce the managers of insured institutions to internalize the risk associated with their investment decisions. This is not to suggest that financial institutions would never fail if the deposit insurance system were reformed. If the moral hazard problem were eliminated, however, one would expect the number of failed institutions to decline. Further, any extant bias towards the overallocation of both financial and real capital to risky investment projects would also be eliminated.

As I emphasized in a recent conference paper (Pesando 1985), risk-related insurance premiums provide one vehicle for internalizing this risk. Indeed, they provide – at least in theory – a means of eliminating the trade-off between the solvency and efficiency objectives of financial regulation. In the interim report of the Ontario Task Force on Financial Institutions, the need to ‘balance’ these inherently opposing objectives is cited as the central task of public policy. If management of an insured institution were to opt for increased risk, the institution would pay a commensurately higher insurance premium. Its insured depositors would, of course, continue to demand only the risk-free rate of interest, while its uninsured depositors would presumably require a higher risk premium. The drawback that is traditionally – and legitimately – cited in arguments against risk-based deposit insurance is the practical difficulty in designing the premium structure. Perhaps the most useful perspective on this problem is achieved by noting that the market solves the analogous problem of valuing risky debt on a daily basis. Nonetheless, the

difficulties in designing a risk-based premium structure must figure prominently in any informed discussion of deposit insurance.

There are five ways to eliminate or to control the incentive for excessive risk-taking contained in the present system:

1 Raise capital requirements to a sufficiently high level that management – acting in the interest of shareholders – will internalize most of the risk associated with its investment decisions. In effect, this change eliminates the asymmetric sharing of investment risk that occurs when shareholder equity is but a small fraction of the institution's liabilities.

2 Require each insured institution to issue a class of subordinated debt equal to, say, 5 per cent of insured deposits. The holders of this debt – acting in their self-interest – will write restrictive covenants and undertake monitoring activities designed to reduce management's ability to take risk. Further, the interest rate on this debt will contain a risk premium commensurate with the risks to which these bondholders are exposed.

3 Introduce a system of risk-based insurance premiums.

4 Design a co-insurance scheme whereby depositors are at risk for some fraction of their insured deposits. Co-insured depositors, like uninsured depositors and subordinated debtholders, will presumably monitor the activities of deposit-taking institutions and ensure that high-risk institutions paid higher interest rates on their liabilities.

5 Impose tighter regulation and supervision so that risk is homogenized across all financial institutions. Only then will a flat rate per dollar of insured deposits be both an efficient and an equitable premium structure.

These strategies will now be discussed in turn.

HIGHER CAPITAL REQUIREMENTS

If shareholder equity in an insured institution were sufficiently large that it would not be exhausted in even the most adverse state of the world, then management – acting solely in the interest of its shareholders – would fully internalize the risk of its investment decisions. Risk-sharing would no longer be asymmetric, since

shareholders would bear the full brunt of 'bad' outcomes as well as reap the full benefit of 'good' ones. In general, the larger is the buffer represented by shareholder equity, the greater will be the degree of risk internalized by managers on behalf of shareholders. Analytically, the net worth of an insured institution is equivalent to the deductible in a regular insurance policy. If the deductible is very large, then the market value of the insurance premium may be quite small. As noted by Kane (1985), management would also internalize risk if limited liability were eliminated for shareholders of insured deposit-taking institutions.¹ Eliminating limited liability would be tantamount – in the present context – to increasing the amount of shareholder equity.

A legislative initiative to raise the minimum capital-to-asset ratio (and thus to reduce leverage) would presumably increase the weighted average cost of capital. The ultimate incidence of any increase in the cost of capital to insured institutions, including its impact on their customers and (perhaps) their international competitiveness, may be of concern to policymakers. Yet there is no free lunch in a well-functioning capital market. If the investment risk of an insured institution is held constant, the risk exposure of the CDIC (and thus the market value of its guarantee) can be reduced if and only if risk is transferred to another party. If this party demands compensation in the form of a higher risk premium, so be it. Indeed, it is the demand by such a party for an appropriate risk premium that ultimately restores market discipline by forcing the management of the insured institution to internalize the consequences of its risk-taking activities.

To place this policy option in perspective, it is important to recognize that debt-to-equity ratios of deposit-taking institutions are very high, especially compared to those of nonfinancial corporations. At year-end 1983 the ratio of shareholders' equity to the total liabilities of the chartered banks equalled 3.82 per cent. For trust and mortgage loan companies this ratio equalled 5.07 per cent. Although these ratios are based on book rather than market values, they are nonetheless suggestive of the very high degree of leverage that exists in the deposit-taking industry.

It is instructive to consider the market forces that weight the optimal capital structure of deposit-taking institutions so heavily towards debt. Such a consideration is necessary if one wishes to assess the implications of, say, raising the minimum capital-to-asset ratio. A

major factor, of course, is the ability of these institutions to issue risk-free debt in the form of insured deposits. Further, regulators as third parties assume a significant portion of the agency costs associated with these high debt-to-equity ratios. In the usual case, creditors must write restrictive covenants, monitor the firm, and engage in other activities in order to limit management's ability to assume risk. Yet creditors must be compensated for the costs of these activities, so that it is ultimately the shareholders of the firm who bear this agency cost. Uninsured depositors/creditors, for their part, may be willing to engage in less monitoring and enforcement if they perceive that the government will not allow a major financial institution to fail. The nonpecuniary and untaxed services derived by holders of the liabilities of these institutions would also serve to raise the optimal amount of debt in the institutions' capital structures. Modern finance theory makes clear that, in general, the issuance of debt by corporations must take place at an interest rate sufficient to compensate debtholders for the tax liabilities they incur as a result. If holders of deposits derive liquidity or other services from them, they need receive no tax 'gross-up' on this component of the total return provided by their claims.

As noted, restricting the degree of leverage permitted a deposit-taking institution by inserting an effective floor under its capital-to-asset ratio will raise its cost of capital. (If the systematic or nondiversifiable risk of its shares is reduced, the required rate of return on equity – one component of this weighted average – may actually decline.) This increase in cost may be of concern to policymakers. To evaluate this concern, it is necessary to determine the ultimate incidence of the subsidy contained in the present system of deposit insurance. To reduce the asymmetry of risk-sharing by raising capital requirements is, in effect, to reduce the subsidy delivered by this present system. The impact of such a reduction will depend upon the way in which the subsidy has been shifted in the past among shareholders, nondeposit creditors, insured and uninsured depositors, and borrowers.

SUBORDINATED DEBT

If a deposit-taking institution were to issue debt subordinated to deposits in the event of solvency, then holders of this debt would become an important source of market discipline. These debtholders

would write restrictive covenants, monitor the institution, and engage in enforcement and like activities designed to reduce management's ability to assume risk. The residual risk to which bondholders are exposed would be internalized fully into the yield required on the debt. Of course, uninsured deposits might remain risky. If so, uninsured depositors would presumably demand appropriate risk premiums, thereby providing an additional form of market discipline. The key point, however, is that the activities of subordinated debtholders would serve as a potent force operating both to limit management's ability to take risk and to require management to internalize the risks that are actually undertaken.

The creation of a class of subordinated debt could complement the initiative of raising the minimum capital-to-asset ratio for a deposit-taking institution. (The possibility of allowing subordinated debt to be counted as capital in the computation of capital leverage ratios is raised by the Wyman Committee, whose recommendations are reviewed in Chapter 3 of this report). Both would increase the weighted average cost of capital of a deposit-taking institution and are likely to be opposed by at least some institutions on this account. Again, one must remember that the present system of deposit insurance serves only to repackage risk, not to eliminate it. The creation of incentives for shareholders and/or debtholders to induce management to internalize risk means that the underwriting of risk by sound institutions, their customers, and taxpayers at large will be reduced. It is in the interest of these third parties, as well as overall economic efficiency, that these initiatives are put forward for discussion.

The advantages and disadvantages of using subordinated debt rather than co-insurance with depositors to induce management to internalize risk are reviewed later, in the discussion of co-insurance. Co-insured depositors, as well as insured depositors and subordinated debtholders, are creditors of the deposit-taking institutions and represent a potential source of market discipline. Independent of the economic arguments for using subordinated debt in the present context, there is a political argument. As evidenced most recently in the failure of Pioneer Trust and the bailout (and subsequent failure) of Canadian Commercial Bank, governments are under intense political pressure to guarantee ex post all of the deposits of an insolvent

institution. Presumably, such political pressure could be mustered less easily on behalf of a failed institution's subordinated debtholders.

The advantages of requiring deposit-taking institutions to issue subordinated debt equal to a specified percentage of their insured deposits, and of permitting such debt to count as capital in the context of reduced capital leverage ratios, merit consideration. These initiatives also draw attention to a number of auxiliary issues – the maturity of the debt, its marketability, and so forth. If deposit-taking institutions are required to issue subordinated debt, and if the debt is marketable, then the readily observed yield on this debt could play a central role in the setting of risk-related insurance premiums.

RISK-RELATED INSURANCE PREMIUMS

Most academic economists have argued in favour of a system of deposit insurance with risk-based premiums.² Risk-based premiums can be both equitable and efficient. Flat premiums, by contrast, encourage excessive risk-taking by management in anticipation of higher expected returns. Since insured depositors do not care about the financial strength of the deposit-taking institution, flat premiums also encourage these institutions to seek maximum leverage or minimum capital-to-asset ratios.

An exception to the predominant academic view is provided by Horvitz (1983), who argues that risk-based insurance premiums make little sense so long as the insurer has the right to force the termination of an insured institution before the market value of its net worth becomes negative. That the setting of risk-based premiums cannot be divorced from the closure policy of the appropriate regulatory body is, of course, true. Yet this fact does not, in my view, refute the case for risk-based premiums. If an insurer could monitor insured institutions costlessly and without error, and if the insurer could arrange to have insured institutions closed while their net worth was still positive, then there would never be any claims against the insurer. Further, managers of deposit-taking institutions would be forced to internalize all of the consequences of their risk-taking activities. This is, however, a quite unrealistic scenario. For example, it abstracts from the legal complications surrounding the closure of a deposit-taking institution. Further, if the costs to the insurer of closing down an institution were minimal, the insurer would have an incentive to close an institution whenever the probability of the institution's insolvency

rose above some very low level. In all likelihood, this would be economically inefficient. If an insurer could not act in this manner, failures would occur and claims against the insurer would arise. In this more realistic world, the argument in favour of risk-based premiums is readily resurrected.

There are two arguments that are frequently made against risk-based insurance premiums. The first is that risk is very difficult to measure and thus that risk-based premiums are very difficult to implement. As noted, this is a legitimate – but not pre-emptive – concern. The second is that, in light of the limited range of insurance premiums and/or the inherent lag in adjusting premiums to changes in the degree of risk borne by institutions, such a system would not eliminate the incentive for excessive risk-taking. This argument is unpersuasive. Even if premiums were set for a year at a time, the system could be designed to have a substantial ex post, or ‘settling-up’, component. If the degree of risk represented by an institution had increased sharply, the premium set to internalize its current risk status would rise, and the institution could be required to make an additional payment to the insurer to offset the underpricing of insurance in the previous year. Awareness of these possible consequences would affect management’s attitude towards risk-taking.

In view of the difficulties in measuring risk, it is likely that any attempt to implement risk-based premiums will start with a range of premiums that is less than the range that would be warranted if a more accurate means of risk assessment were available. This deficiency is not too troublesome. Even with risk-based premiums, regulation and supervision will remain as means of controlling risk. Thus risk-based premiums need not compensate the insurer fully for the costs of industry risk-taking. For a like reason, they need not encompass all forms of risk. (There is, however, the legitimate concern that risk-based premiums may encourage institutions to look for unregulated and underpriced forms of risk-taking.) The feedback from the introduction of risk-based premiums, and the refinement of risk measures that would inevitably occur, would presumably facilitate the later move towards a wider range of insurance premiums, if warranted. Further, to the extent that uninsured depositors and/or subordinated debtholders responded to the

information conveyed by differential premiums, an additional source of market discipline would be brought into play.

How should risks be measured, and how should the premium structure be designed? In general, these are problems for experts in insurance rather than for economists. Nonetheless, it is reasonable to expect that premiums would be linked to one or more of the following: interest rate risk, as reflected in the mismatch of the duration of the institution's assets and liabilities; credit risk, as reflected in the proportion of nonperforming or 'slow' loans; liquidity risk, as reflected in the ratio of easily marketable to total assets; the degree of diversification of the asset portfolio; and the capital-to-asset ratio or some other measure of capital adequacy. To the maximum extent possible, assets and liabilities – and thus capital – should be measured at market values. An important by-product of any serious investigation of risk-based premiums is the additional information that regulators are likely to obtain regarding their ability (or inability) to determine the ex ante risk of failure of a deposit-taking institution.

Some may argue that there have been too few failures of financial institutions to permit the design of an experience-based premium structure. Others may argue that such an attempt is potentially unfair, unless the sources of risk (rather than the class of institution) are the primary focus of such an investigation. In theory, option pricing formulae provide a means of setting risk-related insurance premiums.³ In particular, the premium per dollar of insured deposits should be greater (1) the greater is the variance of the return on the asset portfolio of the insured institution and (2) the higher is the ratio of the market value of the institution's insured deposits to the market value of its assets.

The use of option pricing formulae to set insurance premiums would be premature at this time. The standard formulae are based on assumptions that may be too restrictive and/or ignore (because of their intractability) features that are known to be important.⁴ The formulae also assume that uninsured depositors receive no payments from the insurer in the event of insolvency, and this assumption may prove contrary to fact. Further, fraud remains an important element in the failure of financial institutions, and there is no apparent way to incorporate this consideration into the pricing formulae. Nonetheless, the ratio of insured deposits to assets does vary across institutions. So,

too, does the variance of the rate of return on the asset portfolio, although this is more difficult to measure. For these reasons, option pricing formulae may be most useful at this time as a means of examining the case for differential premiums across institutions, rather than for setting their actual levels. Simulation experiments based on observed or hypothetical ratios of insured deposits to assets, and on hypothetical variances of the returns on asset portfolios, should prove instructive for this purpose.

In the view of many, the likelihood of insurance premiums' being risk-based would be highest if the private sector were involved in the pricing of deposit insurance. Could private firms in fact provide deposit insurance? To the extent that insolvency risk has an important systematic or economy-wide component, a private insurer is unlikely to be able to underwrite this risk. In other words, it is unlikely that the private sector could provide risk-free insurance, or insurance that would be honoured in all states of the world. Indeed, the recent runs on privately insured thrift institutions in both Maryland and Ohio are viewed by many as signalling the end of private deposit insurance, at least as the sole source of insurance, in the United States. Yet one would like to exploit market forces to the greatest extent possible. This suggests that a reinsurance scheme may merit consideration. Institutions could be required to purchase insurance, to a prescribed level, from private insurers. The government could then reinsure claims above a certain level for an appropriate fee and – if necessary – use its taxing powers to smooth its underwriting experience over time. This plan still leaves open the difficult question of how the government should price its reinsurance, as well as the incentives – both to the private insurers and to the insured institutions – created by whatever pricing system is adopted.

If private insurers were involved, then market forces would dictate not only the constraints to be imposed on insured institutions but also the factors that would explicitly enter the pricing formulae. If the fact that an institution is closely held were deemed to signal a higher probability of default, for example, this additional risk would presumably be reflected in the insurance premium. In view of the limited size of the Canadian market, it is possible that only one or two firms might enter this industry. As emphasized in the recent academic literature on contestable markets, this small number does not imply that private insurers would set excessively high premiums

and thus earn abnormal profits. So long as there are no barriers to entry or exit, there is no reason for concern on this account.

Finally, the potential range in risk-based premiums merits comment. At present the CDIC sets an annual premium equal to $3\frac{1}{3}$ cents per \$100 of insured deposits. This is equivalent to an annual tax on insured deposits equal to $3\frac{1}{3}$ basis points. (The Wyman Committee recommends that this 'basic' rate be increased, in two steps, from $1/30$ of 1 per cent to $1/10$ of 1 per cent of insured deposits.) In the United States, where the maximum insurable deposit is \$100,000 US, the annual premium set by the Federal Deposit Insurance Corporation (FDIC) is $8\frac{1}{3}$ cents per \$100 of total deposits. However, the FDIC has a provision for rebates if premium income exceeds expenses and losses. In view of the deficit in the CDIC's insurance fund, estimated at \$871 million at year-end 1984, it is generally conceded that premiums will have to rise. If this deficit were eliminated by a single surcharge, this surcharge would amount to about 54 basis points, based on the \$162 billion in insurable deposits as of 30 April 1984. (No one, of course, advocates eliminating this deficit through a one-time-only surcharge. Indeed, the Canadian Bankers' Association continues to argue that member institutions should not be held liable for losses on CDIC loans used to finance withdrawals in excess of \$60,000 or to make payments to unsecured creditors.) If the CDIC's deficit were to be amortized over ten years, assuming an interest rate of 8 per cent and no growth in insurable deposits, the annual premium surcharge would amount to about 8 basis points.

The present insurance premium – even if augmented to cover the CDIC's deficit – does not appear large if viewed from this perspective. It seems likely that individuals would be willing to forego the equivalent in interest in order to have risky deposits transformed into risk-free deposits. Long-term corporate bonds rated BBB, for example, will often trade at a yield premium of 50 basis points or more relative to long-term corporate bonds rated AAA.

Suppose that a risk-based premium structure is designed to generate the same amount of premium income as the present system, inclusive of a surcharge to recover the deficit of the insurance fund. If the maximum premium is to exceed the minimum by only, say, a factor of two, then this spread is likely to amount to less than 10 basis points. As noted, this is small relative to risk premiums observed elsewhere in the marketplace. Some may wonder whether such

differentials would be of sufficient magnitude to deter risk-taking. Others may wonder whether even this much of a differential can be justified in terms of the reliability of the underlying measures of risk, especially if premium spreads are to serve as an important signal to uninsured or co-insured depositors. Clearly, these concerns must be addressed in any comprehensive review of the role, if any, to be accorded risk-based premiums in the reform of the present insurance system.

To sum up, the academic arguments in support of risk-based premiums are persuasive. The practical problems in implementing such a system are difficult. In this regard, promising areas of study include:

- 1 The design and coverage of deposit insurance, with attention to the creation of incentives for managers to reveal their information regarding the risks being assumed by the institution.⁵
- 2 The role of ex post settling up as a supplement to or substitute for ex ante risk-based premiums.
- 3 The applicability of options pricing formulae to the problem of setting risk-based premiums.
- 4 The relationship between the level and range of premiums and the closure policy to be followed by the regulatory authorities.

CO-INSURANCE WITH DEPOSITORS

Under a co-insurance scheme, insured depositors would remain at risk for some fraction of their deposits, thereby providing an additional source of market discipline. The Wyman Committee proposes, for example, that the ceiling on insurable deposits be raised to \$100,000 but that the CDIC insure only 90 per cent of such deposits. All insured depositors would be at risk for 10 per cent of their deposits. The Canadian Bankers' Association proposes that the principal and interest on deposits up to \$20,000 be 100 per cent insured, while the principal amounts of deposits in excess of \$20,000 are 75 per cent insured, to a maximum claim of \$60,000.

If the co-insurance feature (as well as the ceiling on insurable deposits) were credible, then this scheme would obviously provide a form of market discipline. Yet the use of subordinated debt to induce

management to internalize risk would appear – at least superficially – to have several advantages.

1 The interest rate on subordinated debt would fully internalize the risk of default faced by bondholders, whereas the interest rate on co-insured deposits would only partially internalize the risk of default.

2 The issuance of subordinated debt might represent a more efficient means of both segmenting and pricing default risk, since very risk-averse individuals or institutions could simply choose not to hold it.

3 The use of subordinated debt would imply that only uninsured depositors and subordinated debtholders would have to process the information necessary to monitor the risk status of the deposit-taking institution. Indeed, uninsured depositors might be able to get a 'free ride' on the risk-assessment activities of the debtholders, at least if the debt were marketable and its yield readily observable. (Note, however, that it is the shareholders who would ultimately have to bear these agency costs, since debtholders would demand appropriate compensation for the monitoring costs that they incurred).

4 The use of subordinated debt rather than co-insurance might provide managers of insured institutions with greater flexibility in choosing their preferred degree of risk, within the bounds imposed by regulation. With co-insurance, management might be unwilling to opt for a greater-than-average amount of risk for fear of losing a lot of risk-averse depositors. Yet efficiency requires only that risk be appropriately priced, not that it be equalized across institutions at some very low level.

In addition, as noted earlier, in the event of insolvency it may be more palatable politically to allow subordinated debtholders to suffer losses than to allow co-insured or uninsured depositors to suffer losses.

The ultimate rationale for the public provision of deposit insurance is twofold: (1) to prevent runs on deposit-taking institutions and (2) to protect the small depositor. In addition to having the advantages listed above, subordinated debt would appear to be more effective than co-insurance in achieving both of these goals. The possibility of using subordinated debtholders to impose market discipline warrants detailed consideration. As yet, this option has received little attention in the Canadian context.

TIGHTER REGULATION AND SUPERVISION

Tighter regulation and supervision of insured institutions would, in effect, amount to an increased reliance on implicit insurance premiums. If insurance premiums of a flat amount per dollar of insured deposits are to be both efficient and equitable, risk must be homogenized across institutions. If risks are not equal, less-sound institutions will be subsidized by sound ones and their customers. By design, this regulatory approach – if implemented correctly – provides no flexibility for managers of an insured institution to take on additional regulated risk, even if the managers are willing to pay the market price for doing so.

Risk-based insurance premiums would, at least in theory, be a partial substitute for tighter regulation and supervision. The operational question, however, is whether, and to what extent, regulation and supervision will be accompanied by explicit incentives for management to internalize risk. Recent experience in both Maryland and Ohio, for example, draws attention to the risks to the insurer that occur when an insured institution pays a premium rate on its liabilities as a means of achieving spectacular growth.⁶ Indeed, as recounted by the Wyman Committee, spectacular deposit growth achieved by the payment of premium interest rates is a feature common to most of the institutions making major claims against the CDIC. In principle, regulation could protect the position of the insurer by prohibiting institutions from paying premium rates on their liabilities; that is, regulation could substitute for market forces in the setting of interest rates. One wonders whether the advocates of tighter regulation and supervision would be willing to go so far.⁷ Probably not; yet this issue does highlight the fact that risk will be equalized across insured institutions if and only if draconian regulatory initiatives are undertaken.

To some, deposit insurance is also seen as a tool of competition policy, as it facilitates entry into the financial services industry. If deposit insurance ensured only that new entrants were not incorrectly penalized by the false impression that they represent greater risk, then flat insurance premiums would be neither inequitable nor inefficient. If new entrants are riskier in spite of tighter regulation and supervision, then distortions will occur. Note also that risk-based premiums would allow new entrants to issue risk-free deposits, while

ensuring that any additional risk that they imposed on the insurer was appropriately priced.

OVERVIEW

The incentive for excessive risk-taking contained in the present system of deposit insurance can be eliminated if management is forced or induced to internalize investment risk. In principle, internalization of risk can be achieved through creation of the appropriate incentives for shareholders, subordinated debtholders, and co-insured or uninsured depositors and/or through risk-related insurance premiums. The use of tighter regulation and supervision is another alternative, which would work well if and only if risk were essentially standardized across insured institutions. The suggestion of this report is that reform of the present system should not end with tighter regulation and supervision but rather should include the use of incentives and market forces both to curtail and to price risk-taking. Many might argue that the likelihood of internalization would be greatest if the private sector were involved in the pricing of risk. To involve the private sector in this manner, higher capital-to-asset ratios could be imposed as a quid pro quo for public deposit insurance, and part of this incremental capital could be in the form of subordinated debt. Co-insurance with depositors and supplementary coverage by private insurers represent additional ways of enhancing the role of market forces.

3

The positions of interested parties

THE CANADIAN BANKERS' ASSOCIATION (CBA)

In a document entitled *Comments on Deposit Insurance Reform*, dated November 1984, the CBA sets forth its preferred strategy for reform. On the question of risk-based premiums, the CBA notes:

Rates which vary with risk would moderately enhance market discipline, allow depositors to make more informed investment decisions, be consistent with generally accepted insurance principles and would remove some of the inequities inherent in the current 'flat-rate' system. (p. 17)

The CBA then suggests that premiums be higher in that industry sector in which claims have been concentrated – that is, in the trust industry. (There had been no banks among the eleven institutions whose failures had resulted in recent claims against the CDIC). In fact, economists who advocate risk-based premiums presume that the premium structure would reflect fundamental sources of ex ante risk, such as credit risk, interest rate risk, liquidity risk, and diversification. Whether the premiums so constructed would differ sharply across industry groups would remain to be seen.

In its proposals for reform, CBA assigns a major role to co-insurance. The CBA proposes that full insurance be provided for the first \$20,000 of principal and accrued interest. The principal amounts of deposits in excess of \$20,000 would be 75 per cent insured, to a maximum claim of \$60,000. The use of co-insurance to impose market discipline requires that depositors be able to monitor the risk of various deposit-taking

institutions. The primary role envisioned for the variable insurance premiums proposed by the CBA is as 'risk' signals to depositors. This proposed system requires, of course, that co-insured and uninsured depositors of an insured institutions be allowed to suffer losses if the institution fails. Thus the usual caveat regarding the role of political pressure must be raised in an evaluation of the CBA's proposals.

The CBA also recognizes the need to upgrade inspection and supervisory procedures. This upgrading is not, however, to be the sole – or even the primary – focus of the proposed reforms. The CBA also emphasizes the need to review the CDIC's mandate and recommends that the CDIC delegate any liquidity financing role to the Bank of Canada. In essence, the CBA is concerned that the liquidity lending role may conflict with the need to close those institutions that have negative net worth. As noted in my discussion of risk-related premiums, the closure policy to be followed on behalf of the CDIC is a crucial issue. The CBA is also concerned with the CDIC's recent preference for 'agent/winding down' rather than liquidation of failed institutions. The winding-down option involves the continued operation of a failed institution, and the payment of uninsured as well as insured deposits as they come due. If uninsured depositors are not in fact at risk, a potential source of market discipline is lost. There is no mention by the CBA of raising capital-to-asset ratios for insured institutions or of requiring insured institutions to issue subordinated debt, either as an independent or as an adjunct initiative.

THE TRUST COMPANIES ASSOCIATION OF CANADA

In its *Submission on the Organization and Operations of Canada Deposit Insurance Corporation*, dated January 1985, the Trust Companies Association of Canada advocates tighter regulation and supervision rather than risk-based insurance premiums:

We do not believe that risk-related premiums, even assuming that they can be objectively assessed, would effectively counter tendencies toward excessive risk-taking behaviour nor compensate CDIC for resulting losses. Rather, we see improved regulatory and supervisory controls as the most viable approach to these potential problems. (p. ii)

No reference is made to the possibility of raising capital-to-asset ratios⁸ or of issuing subordinated debt. Again, this is not surprising, since either would raise the cost of capital to trust companies as well as to other deposit-taking institutions. Unlike the CBA, the trust companies argue against the use of co-insurance with depositors as a means of restoring market discipline. They also argue that – for the present – the ceiling on insurable deposits should remain at \$60,000.

The trust companies acknowledge that risk-based premiums are attractive in theory but emphasize that they are difficult to implement in practice. As noted, this is a shared view. The trust companies also believe that regulation and supervision may succeed in equalizing the risk of failure across institutions:

If appropriate standards are established and enforced for membership in the deposit insurance system and the supervisory and regulatory bodies are functioning properly, as we believe with proper reform they will, all member institutions should be assumed to present very nearly the same 'ex ante' level of risk of loss to the system. (p. 26)

The trust companies also question the ability of risk-based premiums to deter risk-taking:

One must ask whether or not risk related premiums would truly be a deterrent to excessive risk-taking behaviour in any case. Assuming rates are set annually and the authorities monitor member institutions carefully, any premium adjustment could only occur after an institution was judged to be a problem case. By that time the effects of an increase in the premium would neither compensate the fund for the then expected loss nor act as a deterrent to the risky behaviour which had already occurred. (pp. 26-27)

In fact, this argument is useful in that it highlights the possibility of including a retroactive element in a system of risk-based insurance premiums. Clearly, as stated by the trust companies, *ex post* 'settling up' will not enable the CDIC to recover any additional payments if the insured institution fails. On the other hand, a retroactive element in the premium structure could be very effective if the institution survived. Managers would know that if they assumed more risk in the current year, then next year's insurance premium would rise and they

would be subject to a surcharge on this year's premium. If the surcharge were appropriately designed, it could force managers to internalize risk, even if an increase in risk were not immediately reflected in a higher insurance premium.

The trust companies raise and then reject the possibility of using co-insurance with private insurers as a means of increasing market discipline. Under such a co-insurance scheme, the CDIC could cover, say, 90 per cent of any loss up to \$60,000, while a private insurer could cover the remaining 10 per cent. The suggestion is that the private insurer, whose interest is solely economic, would both monitor and price risk in a more effective way. The trust companies question whether a private insurer could honour all of its claims in a very adverse state of the world. This is a legitimate concern and suggests that some form of reinsurance by the government may be required if private insurers are mandated into the system.

THE WYMAN REPORT

The committee set up by the federal government to study the CDIC, and chaired by Robert Wyman, submitted its report on 24 April 1985. The federal government released the study, entitled *Final Report of the Working Committee on the Canada Deposit Insurance Corporation*, on 17 June 1985. The Wyman Committee (hereafter, the committee) is concerned with the incentive for excessive risk-taking and the lack of market discipline in the present system. The most publicized recommendation of the committee is that market discipline be restored through a co-insurance scheme with depositors. After a recommended phase-in period of three years, 90 per cent of deposits up to \$100,000 would be insured by the CDIC. Thus all insured depositors would be at risk for 10 per cent of their deposits. There would be no ceiling (say, \$10,000) beneath which deposits would be fully insured. The recommendation that no deposits be fully insured may seem surprising to many observers, given the traditional emphasis on using deposit insurance to protect the small depositor. Yet the committee is quite concerned with the problem of brokered deposits and with the potential for brokers to parcel deposits across institutions so as to maximize insurance coverage. This concern raises the question of whether there are alternative solutions to the problem posed by brokered deposits. It also draws attention to the possibility that providing 100 per cent insurance for deposits up to only, say, \$10,000

might pre-empt strategic behaviour by making the brokerage function too costly. In a news release that accompanied the tabling of the Wyman Report, the Minister of State for Finance, Barbara McDougall, indicated that it would be inappropriate to adopt the co-insurance proposal at this time because of 'the possible implications of such a change for small depositors'. In all likelihood, political – if not economic – considerations will require some ceiling beneath which 100 per cent of deposits are insured by the CDIC.

The committee recommends that the co-insurance scheme be phased in and provides the following illustrative timetable:

Year 1	Insure 100 per cent to \$60,000 of deposits (i.e., no change).
Year 2	Insure 100 per cent to the first \$40,000 of deposits and 90 per cent of the amount between \$40,000 and \$75,000.
Year 3	Insure 100 per cent to the first \$20,000 of deposits and 90 per cent of the amount between \$20,000 and \$90,000.
Year 4 (and thereafter)	Insure 90 per cent to the first \$100,000 of deposits.

This transition period is necessary if insured institutions are to devise ways to credibly convey their risk status to the public and/or take steps to reduce their risk status, so as to be able to present themselves as low-risk institutions. Of course, the co-insurance scheme will impose market discipline only if depositors perceive themselves as being truly at risk. The committee, like other observers, draws attention to the effective 100 per cent insurance coverage provided by the CDIC in recent failures and to the public perception that this may continue. Indeed, the committee draws attention to the various statements made by government officials that have promoted the widespread perception, 'perhaps erroneously held, that no depositor will be allowed to lose any part of a deposit in a chartered bank'.

If co-insured depositors are to make efficient investment decisions, they must assess the degree of risk represented by various financial institutions. In this context, one troublesome feature of the Wyman Committee's proposal merits comment, since it raises a more general concern. This is the recommendation that the CDIC maintain a

'watchlist' of member institutions that are in weak condition and that the names of the institutions on the watchlist not be published. To be effective, co-insurance requires that all agents – including relatively small depositors – monitor the activities and the risk status of deposit-taking institutions. Yet the committee proposes that one of the most relevant pieces of information, and one that could be disseminated without direct cost to the CDIC, be withheld from the public. This position reflects the concern that publishing the names of institutions perceived as weak by the CDIC might make it impossible to rehabilitate them. Yet if this information is of value in predicting the probability that a deposit-taking institution will go bankrupt, it is difficult to justify withholding it from the public.

The committee, in its chapter on market discipline, alludes to the three other ways of inducing management to internalize risk. The committee recommends higher initial capital requirements for all new entrants into the deposit-taking industry, as well as the development – by the CDIC and the regulators – of a maximum leverage ratio for each member institution. This leverage ratio would be based upon the risk profile of each member institution. The committee notes both the theoretical appeal and the implementation problems associated with risk-related insurance premiums. The committee 'is of the opinion that it is not possible at the present time for CDIC to establish a system of risk-related premiums but the issue should be pursued'. It is worthwhile to note that several of the recommendations of the committee, including its proposal that the maximum leverage ratio for each institution be tied to its risk profile, presume that the CDIC can differentiate member institutions by their degree of risk. Indeed, risk-based capital requirements are merely an implicit form of risk-related insurance premiums. The committee does not explicitly raise the question of requiring member institutions to issue a class of debt that would be subordinate to deposits in the event of insolvency. It does, however, refer, in the context of furthering the trend towards lower levels of capital leverage, to the possibility of including subordinated debentures (as well as other instruments) in the capital of member institutions.

In addition, the committee rightly draws attention to the awkwardness inherent in the CDIC's dependence on federal and/or provincial regulatory authorities. The committee proposes that the CDIC be given authority to take action to protect its interest if the

'necessary' action is not being taken by the responsible regulator. This authority would include, for example, the power to alter the leverage ratio of a member institution, to require a change in the management of a member institution, and to take possession and control of the assets of a member institution that is deemed to be carrying on unsound business practices. The committee also proposes that the CDIC be given extended powers regarding supervision, examination, and disclosure.

In many ways the committee's recommendations complement a theme of this analysis. That theme is the need for further research across a wide range of topics, from accounting and real estate valuation standards to the practical problems that currently impede the introduction of risk-based insurance premiums. The committee's primary reliance on a co-insurance scheme, with no deposits having a 100 per cent guarantee, is undoubtedly controversial. It may serve to focus attention, for example, on the possibility that private insurers might be induced to provide supplementary coverage. In addition, deposit-taking institutions might be able to respond in other ways to any demand for full insurance. They might, if permitted by law, segregate deposits backed by risk-free Government of Canada securities, perhaps through the vehicle of a wholly owned subsidiary. In effect, these subsidiaries might serve as the equivalent of money market mutual funds. The latter might come into existence, in any event, if public demand for them increased as a result of insurance reform. Finally, as noted repeatedly in this analysis, there are other ways to try to harness market forces. Higher capital-to-asset ratios and the inclusion of subordinated debt in the computation of capital are two such initiatives that merit serious study. As noted earlier, there are economic arguments (perhaps augmented by political ones) for using subordinated debt rather than co-insurance with depositors as a means of using the self-interest of the insured institution's creditors to impose market discipline.

Reform of the deposit insurance system in order to eliminate the incentive for excessive risk-taking is the major concern of this report. Nonetheless, it is useful to draw attention to the economic analysis relevant to two other issues: the choice of a ceiling on the level of insurable deposits and the possible extension of deposit insurance to additional types of financial institutions. To start, it is useful to review the fundamental rationale for the public provision of deposit insurance.

THE RATIONALE FOR THE PUBLIC PROVISION OF DEPOSIT INSURANCE

There are two persuasive arguments used to justify the public provision of deposit insurance: (1) the need to protect the small depositor and (2) the need to prevent disruptive and costly runs on deposit-taking institutions.

The goal of consumer protection, although legitimate in the present context, is often invoked too casually. Indeed, if one so chose, one could invoke consumer protection to justify further government involvement in virtually all sectors of the economy.⁹ If deposit insurance did not exist, the onus would fall on deposit-taking institutions to convey credible information regarding their soundness to current and prospective depositors. To invoke the image of an unsophisticated consumer faced with the impossible task of assessing the creditworthiness of a wide range of financial institutions is potentially quite misleading. Nonetheless, protection of the small

depositor remains an explicit objective of public policy, and no review of policy options can ignore this reality.

The second rationale, that of pre-empting runs, provides at least a partial answer to the question of whether deposit insurance should be extended to other types of financial institutions. This possibility is raised, for example, in the interim report of the Ontario Task Force on Financial Institutions.¹⁰ Yet this second rationale provides no basis for extending deposit insurance to an institution where (1) liabilities are not due on demand or (2) the possibility exists for the institution to hold liquid assets equal to 100 per cent of those of its liabilities that are due on demand. Investment dealers provide an obvious case in point. Their customers' credit balances represent only a small fraction of their liabilities, and – at least in principle – it would be easy for dealers to back these liabilities with risk-free treasury bills if they so desired. Note, in addition, that the policy objective of pre-empting runs on deposit-taking institutions does not require that no institution – insured or otherwise – be allowed to fail. Its emphasis is on the stability of the system as a whole, not of particular institutions. Some observers have argued, for example, that the rescue of the Canadian Commercial Bank was premised in part on the need to maintain confidence in the banking system, although it is not at all clear that the failure of one regional bank would so jeopardize public confidence.

THE CEILING ON INSURABLE DEPOSITS

At present the ceiling on deposits insurable by the CDIC is \$60,000. This ceiling was raised from \$20,000 in April 1983 and made retroactive to 4 January of that year. The CBA proposes that this ceiling be reduced to \$20,000. The trust companies propose that it remain at \$60,000, to rise over time in line with the rate of inflation. Other groups, such as the Consumers' Association of Canada, want the ceiling raised immediately to \$100,000.

Note first that the debate regarding the ceiling makes sense only if the ceiling is credible – that is, if deposits in excess of the ceiling truly are at risk in the event that the deposit-taking institution becomes insolvent. To establish the credibility of any ceiling may be difficult, given the political pressure to compensate all depositors in the event of a financial failure. The decision by the CDIC to have six of the seven institutions that failed in 1983 wound down by an agent firm, rather

than liquidated, resulted in uninsured depositors' (and unsecured creditors') being paid in full. This decision was rationalized on the grounds that the winding-down approach would minimize costs to the CDIC. Although this claim remains controversial, one implication is not. By making the choice, the CDIC has reduced the credibility of the announced ceiling on insurable deposits. In its 1983 annual report, the CDIC tries to de-emphasize any guarantee implicit in its actions:

It cannot be expected, however, that similar circumstances will necessarily apply in future cases and uninsured depositors must therefore realize that they face the possibility of loss should their deposit institutions fail. (p. 7)

Just recently, however, the CDIC participated in the bailout of the Canadian Commercial Bank, thereby ensuring that its uninsured depositors suffered no losses. As well, the federal and Saskatchewan governments worked out an arrangement to reimburse not only the uninsured depositors of Pioneer Trust but also the owners of income averaging annuity contracts. In short, there is no reason to expect governments to permit uninsured depositors to suffer losses in the event of the failure of a financial institution, in spite of the general consensus that such losses are necessary if market discipline is to be restored.¹¹

If a credible ceiling on insurable deposits were established, then the activities of uninsured depositors would discipline risk-taking by the managers of insured institutions. Even then, however, interest rates would internalize risk only on those deposits in excess of the ceiling. For this reason, it is useful to consider the implications of reducing the ceiling from its present level of \$60,000. If customers wanted to maintain risk-free deposits in excess of a reduced ceiling, they could, of course, maintain accounts at more than one institution. In so doing, they would limit the ability of any single institution to grow rapidly by offering a premium rate on its deposits. At least in principle, institutions could respond to any demand for insurance in excess of the ceiling by segmenting the corresponding deposits and investing them exclusively in treasury bills. Indeed, individuals might find it increasingly easy and convenient to 'roll their own' insurance by buying treasury bills on their own account, perhaps with the assistance of an investment dealer. In this regard, it is useful to note

that deposits insured by the CDIC are equivalent to debt issued by the Government of Canada, yet more divisible and typically more liquid.

It may be instructive to consider the reaction of insured institutions to an announcement that the ceiling will be reduced, in steps, to (say) \$10,000. There are two reactions that one could anticipate. First, the managers of sounder institutions would find it in their interest to draw the public's attention to their soundness, and would devote both imagination and resources to this end. Second, the managers of less sound institutions would find it in their interest to reduce the risk to which their institutions – and their depositors – were exposed. The options available to these managers would be numerous, including, for example, achieving greater asset diversification through syndicated or like arrangements. There might, of course, be pressure on such institutions to merge with larger or more sound ones.

Whatever the merits of the arguments for reducing the ceiling, the case for not raising it appears to be persuasive. To increase the ceiling is to increase the fraction of total deposits for which deposit rates do not internalize risk. Until the incentive for excessive risk-taking in the present system is removed, any increase in this ceiling will further promote economic inefficiency.

EXTENDING 'DEPOSIT INSURANCE' TO OTHER INSTITUTIONS

The externality that justifies the public provision of deposit insurance is the possibility of a costly and disruptive run on a financial institution with highly liquid liabilities but illiquid assets. This externality provides no rationale for extending the concept to property/casualty or life/health insurers. As previously noted, it does not provide a persuasive rationale for insuring free credit balances at investment dealers. Thus the possible extension of deposit insurance to these or like institutions must be tied to the goal of consumer protection. As noted, this goal may be invoked too easily and too casually.

In principle, the establishment of a self-regulated guarantee fund is an attractive solution to the problem of consumer protection. At present, customers with free credit balances at investment dealers are protected by the National Contingency Fund, which has a balance of about \$9 million and is supported by covenants backed by member institutions. Since 1981 four property and casualty insurance companies have failed, and the question of establishing a self-

regulated guarantee fund for insurers is now a topical one. If an industry is to have a self-regulated guarantee fund, then it must have the authority to discipline member institutions. If the industry did have such authority, risk-taking might be internalized in an efficient manner, especially if the payments into the fund were geared in some way to the likelihood of a claim. If the payments were not so geared, the sounder institutions and their customers would be put in a position of subsidizing the less sound ones and, predictably, would be less willing to participate. Care would have to be taken to ensure that self-regulation in the context of the guarantee fund did not become a means by which incumbents effectively restricted entry to the industry. The question of whether such a guarantee fund could provide risk-free insurance, to the specified ceiling, would have to be addressed. So would the question of whether risk-free insurance is even necessary. If the existence of an industry fund promoted self-policing to control and/or internalize risk, then it would serve a useful purpose even if the guarantees so provided were not completely risk free.

In short, the argument for extending the insurance provided by the CDIC to other types of financial institutions is not strong, especially in light of the incentives contained in the present system. The use of self-regulated guarantee funds to promote consumer protection appears to be more attractive. Even here, however, one should be continually reminded of the warranties and guarantees used by nonfinancial firms to ease consumer concerns and of the scope for similar action by individual financial institutions should such concerns become elevated in importance.

Long-run reform of deposit insurance: an agenda for research

The following questions merit further study if the objective of reform is to eliminate the incentive for excessive risk-taking contained in the present system.

1 In view of the fact that insured institutions are subject to both regulation and supervision, is there sufficient variation in risk to warrant a move towards risk-based premiums?

The CBA points out that trust companies have been the source of most of the claims against the CDIC and suggests that sufficient variation does exist. The Trust Companies Association of Canada, in contrast, suggests that regulation and supervision should be able to equalize risk across insured institutions.

In principle, one would like to approach this problem by focusing on signals available in the marketplace. Data on the interest rates paid on deposits in excess of the insurable ceiling could be useful, although these data may be contaminated by the market's differential assessment of implicit government guarantees regarding uninsured deposits. Spokespersons for the trust industry, for example, express concern that the federal government may have provided an implied guarantee that 'no bank will be allowed to fail in Canada'.¹²

Standard option pricing formulae might also prove to be useful. To implement them, it would be necessary to obtain estimates of two key parameters for each insured institution: (1) the ratio of assets to insured deposits and (2) the variance of the return on the asset portfolio. In principle, the first parameter should be observable, since

the CDIC must collect these data in order to levy its premiums. Further, it is possible to draw inferences about the second parameter from market data on the variance of the rate of return on the publicly traded shares of an insured institution, under the hypothesis that this market is efficient. Alternatively, one could use historical data on the variances and co-variances of assets such as Government of Canada and corporate bonds, mortgages, treasury bills, and commercial paper to calculate variances on hypothetical portfolios designed to mirror those typically held by insured institutions. One could simulate the extent to which observed variation in the ratio of assets to insured deposits translates into variation in hypothetical risk premiums. One could also simulate the impact of a change in the ceiling on insurable deposits or of a change in the volatility of asset prices.

2 How is the risk of the asset portfolio of an insured institution to be measured, so that risk-based premiums can be tied to observable and quantifiable characteristics?

If the incentive for excessive risk-taking is eliminated through higher capital-to-asset ratios and/or the issuance of subordinated debt, this problem will not have to be addressed by government. If risk-based premiums are to be given serious consideration, however, this issue cannot be avoided. Presumably, one would begin with a taxonomy of the various sources of risk (liquidity, credit, interest rate, diversification, fraud, etc.), together with an assessment of their relative importance. One would then search for summary statistics that adequately quantify their magnitude. A careful review of prior work conducted on behalf of the Federal Deposit Insurance Corporation (FDIC) and the Federal Savings and Loan Insurance Corporation (FSLIC) in the United States would be a useful point of departure. Both the FDIC and the FSLIC have mandates to study the possibility of introducing risk-based premiums. The relevance of their studies to the Canadian financial system would, of course, have to be critically examined. So, too, would the existing research on bankruptcy classification models. An examination of the financial failures in Canada would be instructive, with attention to the role of fraud as well as to measures of financial risk. Even if a system of risk-based premiums is not implemented, the evidence obtained from this

type of investigation would certainly prove quite useful to the regulatory and supervisory authorities.

3 What would be the economic impact of requiring insured institutions to maintain higher capital-to-asset ratios and/or of relaxing limited-liability provisions?

Justification for this line of inquiry has been given already in this report, and no elaboration is required here. One would wish to consider initiatives similar to one that is under review by the FDIC: raise capital requirements sharply but to give client banks the option of raising the incremental funds by issuing subordinated debt. The role of market value accounting merits attention in this context, as capital requirements are likely to prove ineffective if they are based on book rather than market values.

4 If creditors of insured institutions are to be used to impose market discipline, what are the relative advantages of assigning the primary role to subordinated debtholders as opposed to co-insured or uninsured depositors?

This question too has been discussed extensively in the text. If subordinated debt is to play a role, perhaps in the context of higher capital-to-asset ratios (with subordinated debt's being counted as capital), how should this be implemented? How much importance would be assigned to the signal provided by differences across institutions in the interest rates required on subordinated debt? Should there be maturity restrictions on the debt? Could this initiative, by providing market signals regarding the risk of insured institutions, facilitate a subsequent move to risk-based premiums?

5 What is the appropriate relationship between the CDIC, the Bank of Canada, and federal and provincial regulators? What role, if any, should the CDIC play in the event of a financial crisis?

Should the CDIC, as a provider of insurance services, be concerned exclusively with the problem of insolvency? That is, should the CDIC *not* concern itself with issues pertinent to the stability of the financial system as a whole?

To place these questions in perspective, one must identify the strategy to be followed by the Bank of Canada in its role of lender of last resort. One might argue that the Bank of Canada should be concerned exclusively with the provision of liquidity to *solvent* institutions. In theory, the Bank of Canada's activities would then complement those of the CDIC. By eliminating the need for solvent institutions to sell assets at distress prices, the Bank of Canada could forestall the legal insolvency of sound institutions that were experiencing short-run liquidity problems. There might, however, be times when it is appropriate for the Bank of Canada to lend funds to an institution that is *de facto* insolvent. This might be the case, for example, if a *de jure* insolvency could lead to a financial crisis. The danger is that this principle could be readily abused, with the threat of a financial crisis becoming the routine justification for bailing out troubled institutions.

These issues need clarification, as does the relationship between the CDIC, the Bank of Canada, and the federal and provincial regulators. In his speech to the Canadian Club in Toronto on 23 September 1985, Governor Gerald Bouey provided an important perspective on the aborted bailout of the Canadian Commercial Bank. He stated that the Bank of Canada *had been advised* that the Canadian Commercial Bank was economically solvent and that he had committed the Bank of Canada to providing the necessary liquidity services on the assumption that this was so. If the Bank of Canada had been advised that the Canadian Commercial Bank was insolvent, the governor's response might well have been different.

A number of questions are readily apparent. Which government agency is to have the primary responsibility for assessing the solvency of the insured institutions? Should the CDIC be given expanded supervisory and regulatory powers to protect its interests, as recommended by the Wyman Committee? If so, how is duplication to be avoided? Is it possible to establish precise guidelines for deciding when a *bona fide* financial crisis is at hand, or must all such decisions of the Bank of Canada remain wholly discretionary?

6 What are the determinants of the optimal capital structure of an insured institution, and why is the capital structure of deposit-taking institutions currently weighted so heavily towards debt?

If it were possible to do so, it would be useful to determine, empirically as well as analytically, the impact of introduction or extension of deposit insurance on the choice by a deposit-taking institution of its optimal capital structure. The rate of return required by shareholders of deposit-taking institutions would merit investigation, as would the weighted average cost of capital faced by the institution. If, say, capital leverage were reduced, how would this reduction affect the weighted average cost of capital and its components? What would be the ultimate impact of any reform initiative that had as a by-product the effect of raising the weighted average cost of capital to deposit-taking institutions?

7 In the design of a deposit insurance system, should a higher ceiling on insurable deposits be set for RRSPs, including the locked-in plans proposed in the May 1985 federal budget?

At least superficially, the notion of providing a higher ceiling for deposits held in an RRSP might seem to be appealing. Yet a decision to make one type of investment risk-free, especially when competing vehicles for retirement saving have no such guarantee, would be troublesome.

8 In principle, the design of a system of deposit insurance has many dimensions: minimum coverage, deductibles, co-insurance, supplementary coverage, and so forth. Is it possible to design a system that creates incentives for managers to reveal their own information regarding the risk of the institution, so that it can be used as an input into the pricing of the insurance?

If managers could purchase optional coverage, for all or some of their accounts, their actions would reveal information regarding the price at which they are willing to shed risk. Low-risk institutions, for example, would presumably choose to operate with minimal supplementary coverage, while high-risk institutions might well choose the maximum supplementary coverage. If all institutions opted for the maximum supplementary coverage at the current price, one might infer that the insurance was being underpriced.

9 If the ceiling on insurable deposits were lowered, so that uninsured depositors were assigned the crucial role in monitoring and internalizing risk, how would sound institutions (1) convey this information to the public and (2) meet any demand for risk-free deposits in excess of the insurance ceiling?

This issue is of obvious concern to those who feel that small depositors lack the sophistication and/or the time to assess the risk of financial institutions. The question of how those institutions that are either small or likely to be perceived as risky would be able to retain deposits would have to be addressed.

10 Does economic analysis provide any insights into means of eliminating the present deficit of the CDIC's insurance fund, equal to \$871 million at year-end 1984?

The CBA prefers a solution that does not involve an increase in premium rates, while the trust companies favour a temporary surcharge on existing premiums. The Wyman Committee has recommended that the CDIC raise its basic annual insurance premium from 1/30th of 1 per cent to 1/10th of 1 per cent and issue \$1 billion of floating rate preferred shares to member institutions on an obligatory pro rata basis. In a competitive insurance market, no insurer could recover past losses by levying a premium surcharge, since its clients would simply switch to another insurer. What is the implication of this and like considerations for the problem at hand? The size, rationale, and incidence of any premium surcharge would merit study, as would the relationship of such a surcharge to any prospective change in the premium structure.

11 If the CDIC, in the process of setting risk-based insurance premiums, were to compile inside information regarding the risk status of an insured institution – a 'watch list' or the like – how much of this information should it disclose to the public?

As noted, the Wyman Committee recommends that the CDIC maintain a 'watch list' and that the names of the institutions on this list not be disclosed to the public. Clearly, the objective is to prevent the creation of obstacles that might hinder the rehabilitation of a

troubled institution. Yet if co-insurance is to be the central means of restoring market discipline, it seems inappropriate to deliberately withhold information that might be of value to depositors in their ongoing efforts to monitor the risk status of deposit-taking institutions. The issue of what information the CDIC should disclose is more general and requires analysis in the context of each of the alternative approaches to restoring market discipline.

12 How feasible is a move towards market value accounting, and how does the feasibility of such a move influence the choice of an approach to restoring market discipline?

Capital-to-asset or leverage ratios are of quite limited usefulness if they are based on book rather than market values of an institution's capital. What are the major obstacles to determining and reporting the market value of an institution's assets and liabilities? If a move towards market value accounting were deemed to be unfeasible at present, how would this influence the choice among alternative ways of restoring market discipline? Equivalently, which agents are likely to experience the least difficulty in 'piercing the veil' of present accounting and valuation procedures?

13 Is it possible to estimate the market value of the guarantees provided by the CDIC (i.e., the market value of the insurance in force) in order to estimate the risk exposure of the CDIC, to provide an input into the setting of insurance premiums, to monitor the way in which reforms are or are not reducing risk-taking activities, and so forth?

In essence, and as emphasized by Kane (1985), the guarantee provided by the CDIC or other insurer appears as an implicit asset on the augmented balance sheet of an insured institution. If all other balance-sheet and off-balance-sheet assets and liabilities are accounted for, one can – in principle – identify the value of the insurance provided by the insurer, net of the present value of future premiums to be paid by the insured. Is this approach feasible in Canada? With what precision might one expect to be able to measure the value of this insurance?

14 What complications arise from the fact that the risk to the provider(s) of deposit insurance is not likely to be diversifiable?

In the event of major or system-wide shocks, a provider of deposit insurance might be vulnerable to large or even catastrophic losses. How should this fact be reflected in insurance premiums, and are there risk-management opportunities available to the insurer to reduce this exposure?

In providing deposit insurance, the insurer is selling a put option to the insured institutions. The optioned asset is the portfolio of the insured institution, and the striking price is the amount of the insured liabilities. If the insurer could devise a way to, in effect, sell the same option in the capital market, then the insurer could simultaneously (1) shed its underwriting risk and (2) extract the market price for the insurance that it provides. This line of inquiry may warrant further investigation, especially if a role is envisioned for private insurers. A public provider of deposit insurance may opt *not* to engage in risk-management activities. If so, one would wish to determine if there were any way, besides building a sizeable reserve fund, to 'smooth' underwriting losses over time.

Notes

- 1 The move to, say, double or triple liability on the book value of the shares of an insured institution would, for a given required rate of return by investors, reduce the market price of these shares. In this sense the 'cost' of raising equity capital would rise as the result of such an initiative. According to received models of price determination in the capital market, the required rate of return on equity would rise if and only if the systematic or nondiversifiable risk of the shares rose as a consequence of the initiative.
- 2 For a list of studies by academic economists who favour risk-based premiums, see Kane (1985).
- 3 See, for example, Marcus and Shaked (1984). Note that the provider of deposit insurance has, in effect, sold a put option to the depositors of the insured institution. These depositors can 'put' the assets of the insured institution to the insurer if their value falls beneath the value of the insured deposits.
- 4 To apply the standard Black-Scholes formula, for example, it is necessary to assume that the variance of the rate of return on the asset portfolio remains constant over time. Yet, it is well known that managers of insured institutions have a strong incentive to increase the risk in the asset portfolio as the net worth of the institution declines. The models also assume that the insured institution is shut down at the instant that the insurer discovers that its net worth is negative. This assumption may also be invalid. Although an attempt has been made to include random (rather than end-of-period) audits in the formal analysis, no one has yet taken into consideration that the probability of a future

audit is conditioned by what is discovered in the current audit. (For an example of this extended analysis, see Merton [1978]).

- 5 See Kane (1985) for a discussion of this issue. The centrepiece of his proposed strategy involves introducing co-insurance and deductibles into supplementary coverage, above a ceiling of \$10,000 on fully insurable deposits. Recent academic research on 'separating' or self-selecting equilibria in insurance markets is of relevance as well. Such equilibria might occur in markets characterized by asymmetric information and the resulting adverse selection problem. High-risk individuals reveal themselves by purchasing extended insurance coverage at high premium rates, while low-risk individuals purchase reduced coverage at low premium rates. By observing the behaviour of the managers of insured institutions under such a scheme, one might be able to extract information relevant to, say, the setting of risk-based insurance premiums.
- 6 Baltimore's Old Court Savings and Loan, for example, was recently able to offer money market accounts with interest rates of up to 11 per cent, compared with about 8.5 per cent offered by federally insured thrifts. Between 1983 and 1985, the assets at Old Court rose from \$140 million to \$873 million. See *Time* (1985).
- 7 The Wyman Committee does not advocate placing a cap on interest rates, although it does recommend that the CDIC be given the power to restrict interest rates when dealing with problem institutions. Note, in any event, the difficulties in enforcing ceilings on implicit forms of paying interest.
- 8 The trust companies draw attention (p. 8) to the possibility of raising capital requirements to deter entry into the deposit-taking industry, but they do not develop this line of reasoning or incorporate it into their recommendations.
- 9 See, for example, Benston (1983).
- 10 Consider, for example, the following observation of the task force in its interim report:

Indeed, the existence of deposit insurance seems to substantiate the tacit but widely-held assumption that no financial institution can be allowed to fail in the Canadian context.

In a public opinion survey of Ontario's residents . . . we found confirmation that the public fully expects that government will not allow financial institutions to fail,

whether or not they are covered by deposit insurance.
(p. 13)

- 11 On 1 September 1985 the Government of Canada announced the failures of two banks, the Canadian Commercial Bank and the Northland Bank. The Government also announced its intention to introduce special legislation to authorize it to pay to depositors not insured by the CDIC the amount on deposit as of 1 September 1985.
- 12 See Trust Companies Association of Canada (1985, 8). As observed in note 11, however, this concern is now dated.

Bibliography

- Benston, George (1983) 'Deposit insurance and bank failures'. *Federal Reserve Bank of Atlanta, Economic Review*, March, 4-17
- Canada Deposit Insurance Corporation (CDIC) (1984) *Annual Report* (Ottawa)
- Canadian Bankers' Association (CBA) (1984) *Comments on Deposit Insurance Reform* (Toronto: CBA)
- Horvitz, Paul M. (1983) 'The case against risk-related deposit insurance premiums'. *Housing Finance Review* 2(3): 253-64
- Kane, Edward J. (1985) 'Correcting incentive problems in US deposit insurance: the range of alternative solutions'. Paper presented at the Conference on the Changing Regulatory Environment for Canadian Financial Institutions, Toronto, 22-23 May
- Marcus, Alan J., and Israel Shaked (1984) 'The valuation of FDIC insurance using option-pricing estimates'. *Journal of Money, Credit and Banking* 16(4): 446-60
- Merton, Robert C. (1978) 'On the cost of deposit insurance when there are surveillance costs'. *Journal of Business* 51(3): 439-52
- Pesando, James E. (1985) 'Government responses to the regulatory challenge: the interim report of the Ontario task force and the federal green paper'. Paper presented at the Conference on the Changing Regulatory Environment for Canadian Financial Institutions, Toronto, 22-23 May
- Time* (1985) 'Another time bomb goes off'. 27 May
- Trust Companies Association of Canada (1985) *Submission on the Organization and Operations of Canada Deposit Insurance Corporation* (Toronto: Trust Companies Association of Canada)

Working Committee on the Canada Deposit Insurance Corporation
(1985) *Final Report of the Working Committee on the Canada
Deposit Insurance Corporation* (Ottawa: Ministry of Supply and
Services)

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